FIG. 1

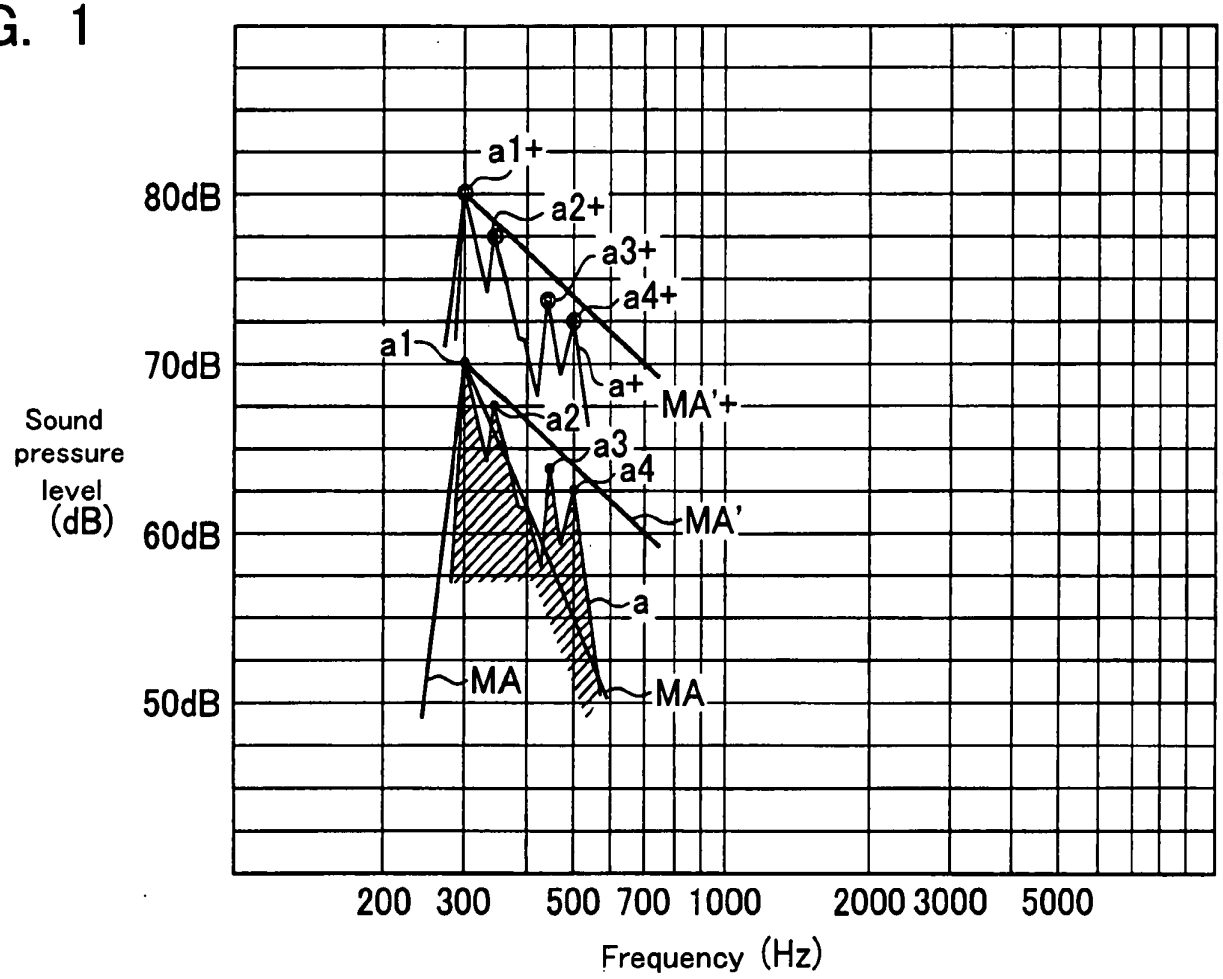

80dB
70dB
60dB
50dB
Sound pressure level (dB)
a1+
a2+
a3+
a4+
a1
a+
MA'+
a2
a3
a4
MA'
a
MA
MA
200 300 500 700 1000 2000 3000 5000
Frequency (Hz)

FIG. 2

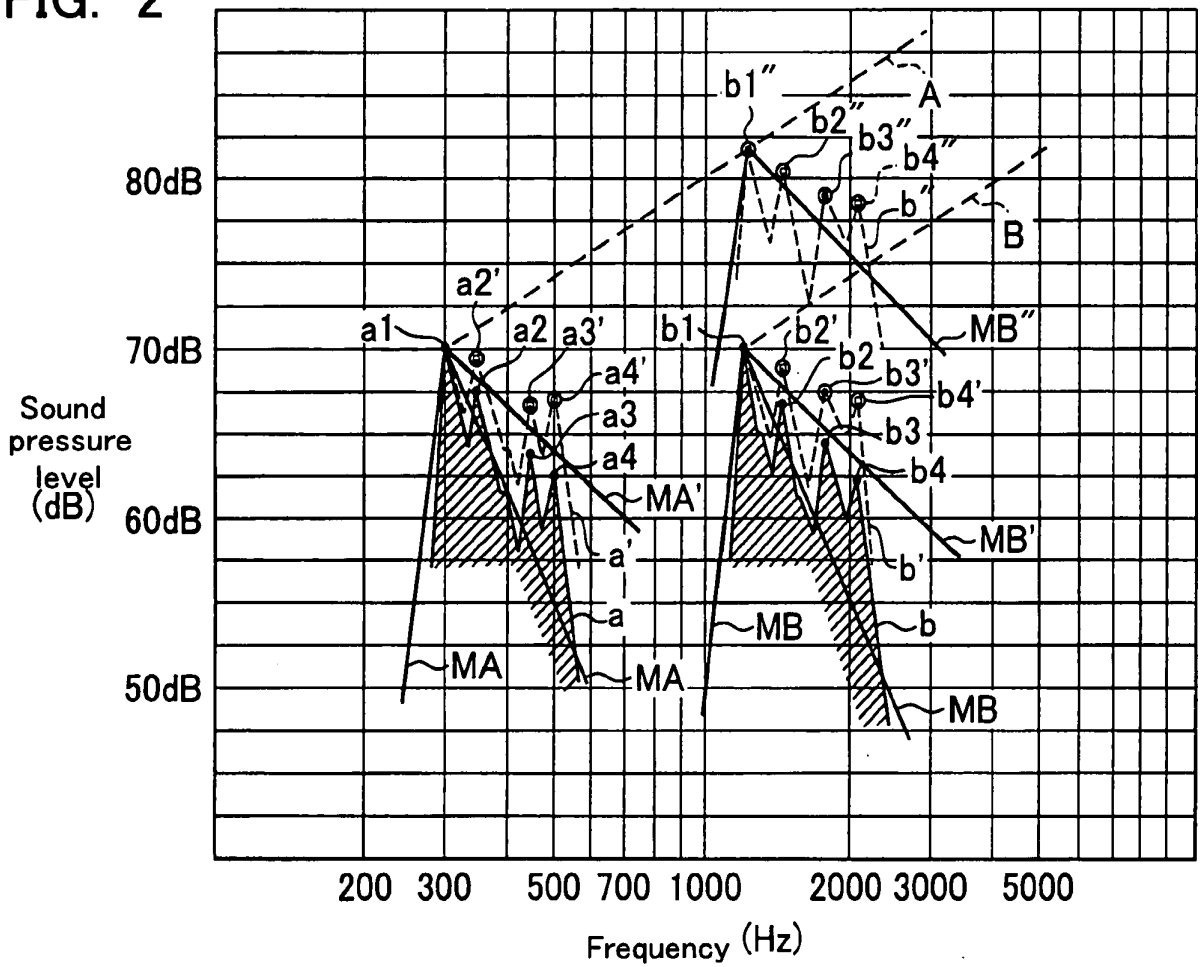
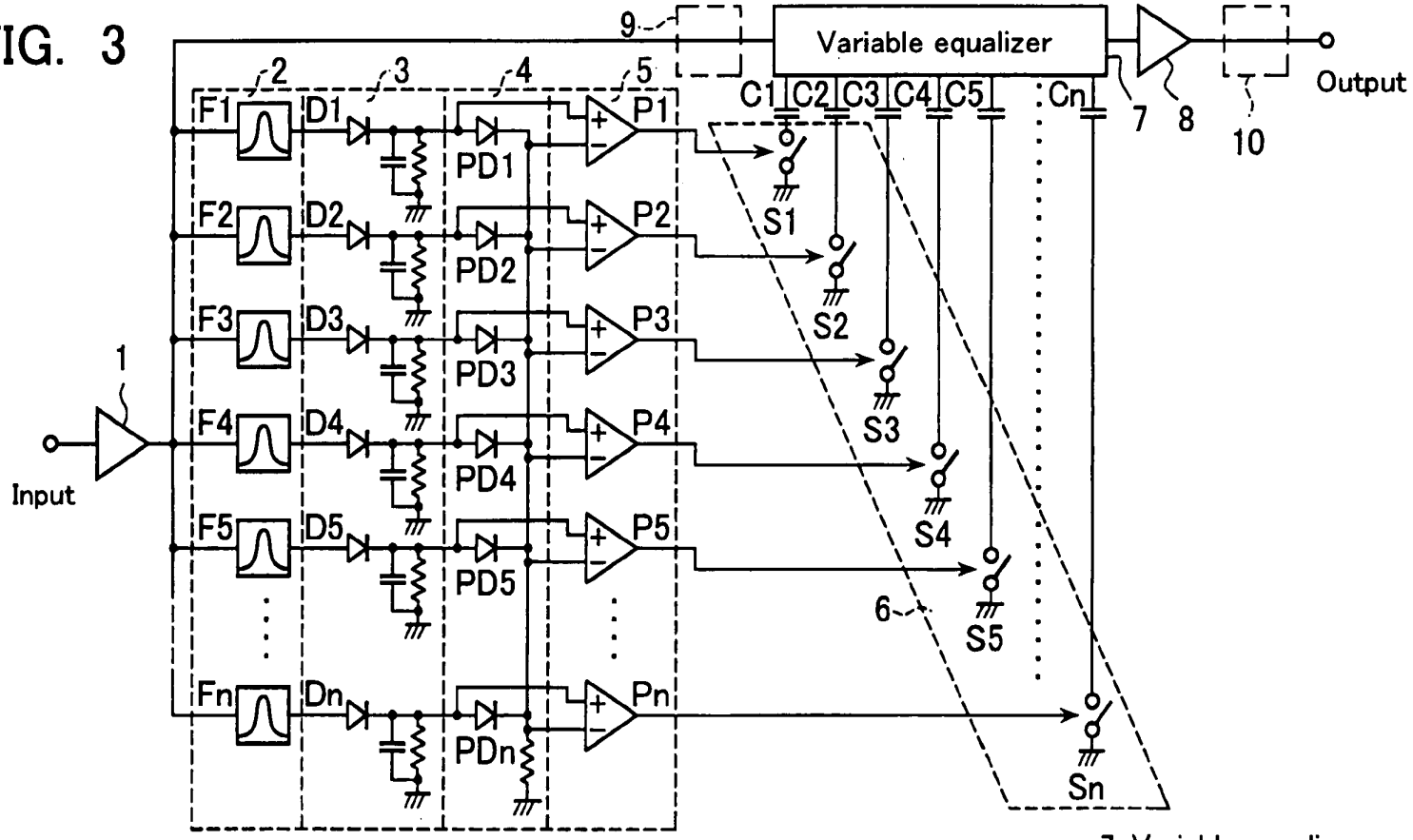

80dB
70dB
60dB
50dB
Sound pressure level (dB)
200 300 500 700 1000 2000 3000 5000
Frequency (Hz)
A
B
b1″
b2″
b3″
b4″
b″
MB″
a1
a2
a3′
a2′
a4′
a3
a4
MA′
a′
a
MA
MA
b1
b2′
b2
b3′
b4′
b3
b4
MB′
b′
MB
b
MB

FIG. 3



1: Buffer circuit

2: Filter group

3: Rectification circuit group

4: Peak detection circuit group

5: Comparator group

6: Analog switch group

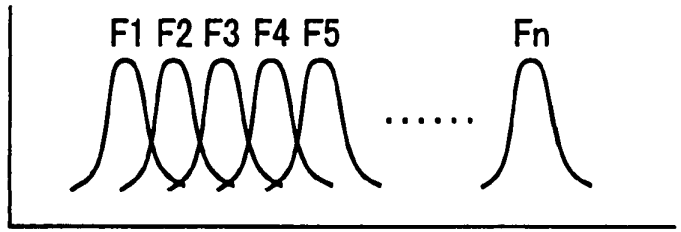
7: Variable equalizer

8: Buffer circuit

9: Delay circuit

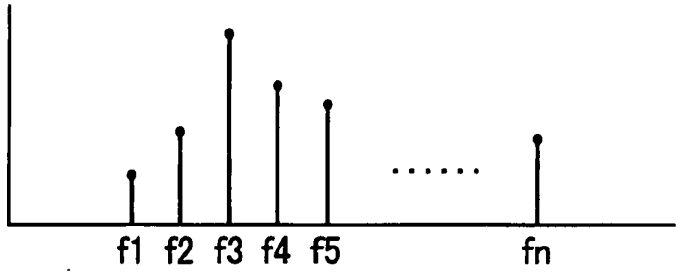
10: A/D converter

FIG. 4A



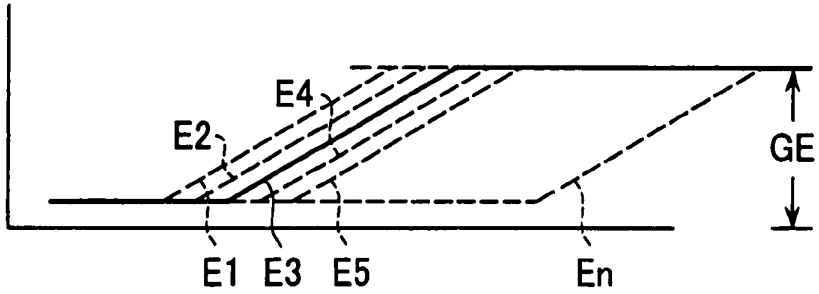
Characteristics of filters for analyzing frequencies

FIG. 4B



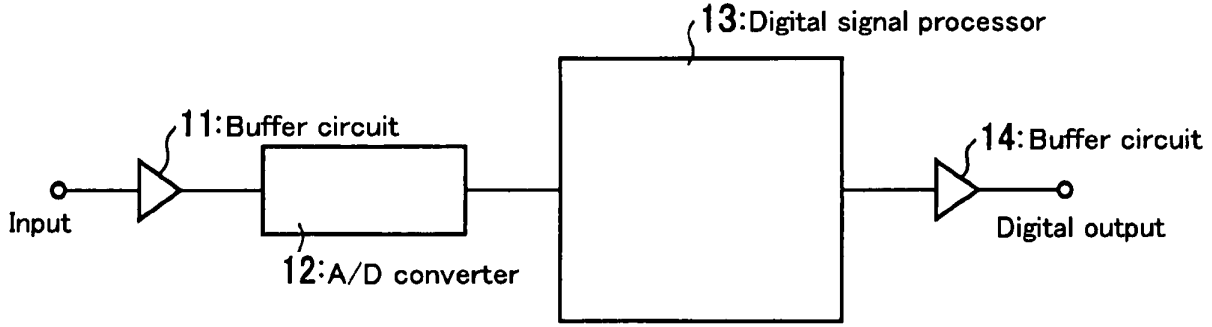
Output levels of filters

FIG. 4C



Equalizer characteristic changing according to output level of filter

FIG. 5


13:Digital signal processor
11:Buffer circuit
14:Buffer circuit
Input
Digital output
12:A/D converter